

We Claim:

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5 1. A rhenium and transition metal free catalyst for the oxidation of ethylene to ethylene oxide comprised of silver on a solid support and containing a promoter combination consisting essentially of (1) an alkali metal component in amount of at least 1000⁵⁰⁰ ppm, based on the weight of the catalyst; and (2) a sulfur component in amount of 40-150⁵% of the equivalent weight necessary to form the alkali metal sulfate.

10 2. The catalyst of claim 1 wherein the alkali metal component is cesium.

3. The catalyst of claim 2 wherein the cesium component is in amount of 1200⁷⁰⁰ to 3000 ppm.

15 4. The catalyst of claim 1 wherein the support is alpha alumina.

5. The catalyst of claim 1 comprised by weight of 5-20% silver.

6. The catalyst of claim 1 additionally containing 10-300 ppm of a fluorine component.

20 7. The method for producing ethylene oxide which comprises reacting ethylene and molecular oxygen in the presence of the catalyst of claim 1.